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"Surrogate Modeling and Uncertainty Quantification in Models of Physical Systems."

Abstract: Surrogate modeling in physical systems is useful for various purposes including optimization, uncertainty quantification, parameter estimation, and control. Recent advances in uncertainty quantification (UQ) have led to the development of efficient algorithms and tools for the construction of surrogates in large scale computational models of physical systems. These developments have had to deal with the dual challenges of high-dimensionality and computational costs of complex models. This talk will cover the state of the art in this context, highlighting and demonstrating robust efficient workflows for dimensionality reduction, surrogate construction, and UQ in large scale computational models of physical systems.